Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1(currently amended): An active pixel sensor for producing images from electron-hole producing radiation comprising:

A) a solid state radiation detection unit comprising:

1) a crystalline semiconductor substrate;

2) a plurality of Complementary Metal Oxide Semiconductor pixel circuits incorporated into said substrate to form an array of pixel circuits, wherein each of said array of pixel circuits comprises:

a) a charge collecting pixel electrode;

b) a charge sensing node;

c) a gate bias transistor separating said charge collecting pixel electrode and said charge sensing node and maintaining said pixel electrodes at substantially equal potential;

d) a pixel capacitor comprising said charge collecting pixel electrode and said charge sensing node, wherein said pixel capacitor is configured to store charges collected by said charge collecting pixel electrode;

e) a charge measuring circuit comprising at least one transistor, wherein a gate of said at least one transistor is electrically connected to said charge sensing node;

3) a radiation absorbing layer comprised of photoconductive material covering at least a portion of said array of pixel circuits, wherein said photoconductive material is photoconductive on exposure to said electron-hole producing radiation;

4) a surface electrode layer comprised of electrically conducting material and formed on said radiation absorbing layer, wherein said surface electrode layer is at least partially transparent to said electron-hole producing radiation, and connected to a voltage source for establishing an electrical field across said radiation absorbing layer and between said surface electrode layer and each of said array of charge collecting pixel electrodes; and

B) an array measurement circuit for measuring charges collected by each of said array of charge collecting pixel electrodes, and for outputting pixel data indicative of said collected charges, wherein said pixel data comprises information defining an image.

Claim 2 (cancelled)

Claim 3 (original): The sensor according to claim 1, wherein a gate of said gate bias transistor is biased by constant voltage to minimize pixel crosstalk among adjacent pixel electrodes within said array of pixel electrodes.

Claim 4 (original): The sensor according to claim 1, wherein said charge sensing node comprises metal and provides an electrical connection to said gate of said at least one transistor in said charge measuring circuit.

Claim 5 (original): The sensor according to claim 1, wherein said charge sensing node comprises polycrystalline semiconductor material and provides an electrical connection to said gate of said at least one transistor in said charge measuring circuit.

Claim 6 (original): The sensor according to claim 1, wherein said charge sensing node comprises a p-type doped region in said substrate and provides an electrical connection to said gate of said at least one transistor in said charge measuring circuits.

Claim 7 (original): The sensor according to claim 1, wherein said charge sensing node comprises a n-type doped region in said substrate and provides an electrical connection to said gate of said at least one transistor in said charge measuring circuits.

Claim 8 (cancelled)

Claim 9 (original): The sensor according to claim 1, wherein each of said array of pixel circuits comprises at least four transistors.

Claim 10 (original): The sensor according to claim 1, wherein each of said array of pixel circuits comprises at least six transistors.

Claim11 (original): The sensor according to claim 1, wherein said pixel capacitor is defined by the structure between said charge sensing node and said crystalline semiconductor substrate.

Claim 12 (original): The sensor according to claim 1, wherein said radiation absorbing layer comprises hydrogenated amorphous silicon.

Claim 13 (original): The sensor according to claim 1, wherein said radiation absorbing layer is a continuous layer.

Claim 14 (original): The sensor according to claim 1, wherein said radiation absorbing layer is a discontinuous layer.

Claim 15 (original): The sensor according to claim 1, wherein said radiation absorbing layer is a patterned layer.

Claim 16 (original): The sensor according to claim 1, wherein said radiation absorbing layer comprises trenches.

Claim 17 (original): The sensor according to claim 1, wherein said radiation absorbing layer is substantially planar.

Claim 18 (original): The sensor according to claim 1, wherein said radiation absorbing layer is a continuous layer that is fabricated during a continuous deposition process.

Claim 19 (original): The sensor according to claim 1, wherein said radiation absorbing layer is a p-n photodiode layered structure, wherein said p-layer is electrically connected to said charge collecting pixel electrode, and said n-layer is electrically connected to said surface electrode layer.

Claim 20 (original): The sensor according to claim 1, wherein said radiation absorbing layer is a p-i-n photodiode layered structure, wherein said n-layer is electrically connected to said charge collecting pixel electrode, and said p-layer is electrically connected to said surface electrode layer.

Claim 21 (original): The sensor according to claim 20, wherein said p-layer comprises p-type doped hydrogenated amorphous silicon.

Claim 22 (original): The sensor according to claim 20, wherein said n-layer comprises n-type doped hydrogenated amorphous silicon.

Claim 23 (original): The sensor according to claim 20, wherein said I-layer comprises un-intentionally doped hydrogenated amorphous silicon.

Claim 24 (original): The sensor according to claim 1, wherein said radiation absorbing layer is a n-I-p photodiode layered structure, wherein said p-layer is electrically connected to said charge collecting pixel electrode, and said n-layer is electrically connected to said surface electrode layer.

Claim 25 (original): The sensor according to claim 24, wherein said p-layer comprises p-type doped hydrogenated amorphous silicon.

Claim 26 (original): The sensor according to claim 24, wherein said n-layer comprises n-type doped hydrogenated amorphous silicon.

Claim 27 (original): The sensor according to claim 24, wherein said I-layer comprises un-intentionally doped hydrogenated amorphous silicon.

Claim 28 (original): The sensor according to claim 1, wherein said radiation absorbing layer comprises a photoconductive un-intentionally doped layer.

Claim 29 (original): The sensor according to claim 28, wherein said photoconductive un-intentionally doped layer comprises hydrogenated amorphous silicon.

Claim 30 (original): The sensor according to claim 1, wherein said charge collecting pixel electrode comprises a patterned metal plate.

Claim 31 (original): The sensor according to claim 1, wherein said charge collecting pixel electrode is formed by a surface of at least one via used for interlayer connection by a semiconductor fabrication process.

Claim 32 (original): The sensor according to claim 1, wherein said charge collecting pixel electrode is formed by a surface of a single via.

Claim 33 (original): The sensor according to claim 1, wherein said surface electrode layer comprises indium tin oxide.

Claim 34 (original): The sensor according to claim 1, wherein said surface electrode layer comprises tin oxide.

Claim 35 (original): The sensor according to claim 1, wherein said surface electrode layer comprises titanium nitride.

Claim 36 (original): The sensor according to claim 1, wherein a potential difference between
adjacent pixel electrodes is in a range of about 1 to about 50 millivolts.

Claim 37 (original): The sensor according to claim 1, wherein said sensor comprises a fill factor of at least 40 percent.

Claim 38 (original): The sensor according to claim 1, wherein said sensor comprises a fill factor of at least 80 percent.

Claim 39 (currently amended): A method of minimizing pixel crosstalk between pixels in an active pixel sensor array comprising:

A) fabricating a solid-state radiation detection unit comprising:

1) providing a crystalline semiconductor substrate;

2) incorporating a plurality of Complementary Metal Oxide Semiconductor pixel circuits into said substrate to form an array of pixel circuits, wherein each of said array of pixel circuits comprises:

a) a charge collecting pixel electrode;

b) a charge sensing node;

c) a gate bias transistor separating said charge collecting pixel electrode and said charge sensing node and maintaining said pixel electrodes at substantially equal potential;

d) a pixel capacitor comprising said charge collecting pixel electrode and said charge sensing node, wherein said pixel capacitor is configured to store charges collected by said charge collecting pixel electrode;

e) a charge measuring circuit comprising at least one transistor, wherein a gate of said at least one transistor is electrically connected to said charge sensing node;

3) covering at least a portion of said array of pixel circuits with a radiation absorbing layer comprising photoconductive material, wherein said photoconductive material is photoconductive on exposure to said electron-hole producing radiation;

4) forming a surface electrode layer comprising electrically conducting material on said radiation absorbing layer, wherein said surface electrode layer is at least partially transparent to said electron-hole producing radiation, and connected to a voltage source for establishing an electrical field across said radiation absorbing layer and between said surface electrode layer and each of said array of charge collecting pixel electrodes;

B) measuring charges collected by each of said array of charge collecting pixel electrodes with an array measurement circuit; and

C) outputting pixel data indicative of said collected charges of said array of charge collecting pixel electrodes, wherein said pixel data comprises information defining an image.

Claim 40 (cancelled)

Claim 41 (original): The method according to claim 39, wherein a gate of said gate bias transistor is biased by constant voltage to minimize pixel crosstalk among adjacent pixel electrodes within said array of pixel electrodes.

Claim 42 (original): The method according to claim 39, wherein said charge sensing node comprises metal and provides an electrical connection to said gate of said at least one transistor in said charge measuring circuit.

Claim 43 (original): The method according to claim 39, wherein said charge sensing node comprises polycrystalline semiconductor material and provides an electrical connection to said gate of said at least one transistor in said charge measuring circuit.

Claim 44 (original): The method according to claim 39, wherein said charge sensing node comprises a p-type doped region in said substrate and provides an electrical connection to said gate of said at least one transistor in said charge measuring circuits.

Claim 45 (original): The method according to claim 39, wherein said charge sensing node comprises a n-type doped region in said substrate and provides an electrical connection to said gate of said at least one transistor in said charge measuring circuits.

Claim 46 (cancelled)

Claim 47 (original): The method according to claim 39, wherein each of said array of pixel circuits comprises at least four transistors.

Claim 48 (original): The method according to claim 39, wherein each of said array of pixel circuits comprises at least six transistors.

Claim 49 (original): The method according to claim 39, wherein said pixel capacitor is defined by the structure between said charge sensing node and said crystalline semiconductor substrate.

Claim 50 (original): The method according to claim 39, wherein said radiation absorbing layer comprises hydrogenated amorphous silicon.

Claim 51 (original): The method according to claim 39, wherein said radiation absorbing layer is a continuous layer.

Claim 52 (original): The method according to claim 39, wherein said radiation absorbing layer is a discontinuous layer.

Claim 53 (original): The method according to claim 39, wherein said radiation absorbing layer is a patterned layer.

Claim 54 (original): The method according to claim 39, wherein said radiation absorbing layer comprises trenches.

Claim 55 (original): The method according to claim 39, wherein said radiation absorbing layer is substantially planar.

Claim 56 (original): The method according to claim 39, wherein said radiation absorbing layer is a continuous layer that is fabricated during a continuous deposition process.

Claim 57 (original): The method according to claim 39, wherein said radiation absorbing layer is a p-n photodiode layered structure, wherein said p-layer is electrically connected to said charge collecting pixel electrode, and said n-layer is electrically connected to said surface electrode layer.

Claim 58 (original): The method according to claim 39, wherein said radiation absorbing layer is a p-I-n photodiode layered structure, wherein said n-layer is electrically connected to said charge collecting pixel electrode, and said p-layer is electrically connected to said surface electrode layer.

Claim 59 (original): The method according to claim 58, wherein said p-layer comprises p-type doped hydrogenated amorphous silicon.

Claim 60 (original): The method according to claim 58, wherein said n-layer comprises n-type doped hydrogenated amorphous silicon.

Claim 61 (original): The method according to claim 58, wherein said I-layer comprises un-intentionally doped hydrogenated amorphous silicon.

Claim 62 (original): The method according to claim 39, wherein said radiation absorbing layer is a n-I-p photodiode layered structure, wherein said p-layer is electrically connected to said charge collecting pixel electrode, and said n-layer is electrically connected to said surface electrode layer.

Claim 63 (original): The method according to claim 62, wherein said p-layer comprises p-type doped hydrogenated amorphous silicon.

Claim 64 (original): The method according to claim 62, wherein said n-layer comprises n-type doped hydrogenated amorphous silicon.

Claim 65 (original): The method according to claim 62, wherein said I-layer comprises un-intentionally doped hydrogenated amorphous silicon.

Claim 66 (original): The method according to claim 39, wherein said radiation absorbing layer comprises a photoconductive un-intentionally doped layer.

Claim 67 (original): The method according to claim 66, wherein said photoconductive un-intentionally doped layer comprises hydrogenated amorphous silicon.

Claim 68 (original): The method according to claim 39, wherein said charge collecting pixel electrode comprises a patterned metal plate.

Claim 69 (original): The method according to claim 39, wherein said charge collecting pixel electrode is formed by a surface of at least one via used for interlayer connection by a semiconductor fabrication process.

Claim 70 (original): The method according to claim 39, wherein said charge collecting pixel electrode is formed by a surface of a single via.

Claim 71 (original): The method according to claim 39, wherein said surface electrode layer comprises indium tin oxide.

Claim 72 (original): The method according to claim 39, wherein said surface electrode layer comprises tin oxide.

Claim 73 (original): The method according to claim 39, wherein said surface electrode layer comprises titanium nitride.

Claim 74 (original): The method according to claim 39, wherein a potential difference between adjacent pixel electrodes is in a range of about 1 to about 50 millivolts.

Claim 75 (original): The method according to claim 39, wherein said sensor comprises a fill factor of at least 40 percent.

Claim 76 (original): The method according to claim 39, wherein said sensor comprises a fill factor of at least 80 percent.